REMARKS[1]

In the outstanding Office Action, the Examiner rejected claims 21-23 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication No. 2003/0044118 to Zhou et al. (Zhou); rejected claims 1, 7, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Zhou; rejected claims 3 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Zhou in further view of "Planar Er- and Yb-Doped Amplifiers and Lasers" to Hübner et al. (Hübner); rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Zhou in further view of U.S. Patent No. 6,088,492 to Kaneko et al. (Kaneko); rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Zhou in further view of "Theory and Optimization of Lens Ducts" to Beach (Beach); rejected claims 6, 10, 12, and 14 under 35 U.S.C. § 103(a) as being unpatentable over Zhou in further view of U.S. Patent No. 6,760,520 to Medin et al. (Medin); rejected claims 11 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Zhou in further view of U.S. Patent Publication No. 2003/0185266 to Henrichs (Henrichs); and objected to claims 24 and 25 for being dependent on a rejected base claim, but otherwise containing allowable subject matter.

By this amendment, Applicant has amended claims 1 and 21, and has canceled claims 15-20. Claims 1, 3-14, and 21-25 are now pending in this application.

Allowable Subject Matter

Applicant gratefully acknowledges the indication of allowable subject matter in claims 24 and 25.

Claim Rejections Under 35 U.S.C. § 102(e)

Applicant respectfully traverses the Examiner's rejection of claims 21-23 under 35 U.S.C. § 102(e). In order to properly anticipate Applicant's claimed invention under 35 U.S.C.

[1] The Office Action contains statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement or characterization in the Office Action.

§ 102, each and every element of the claim in issue must be found, "either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." *See* MPEP § 2131, 8th Ed. (Rev. 6), September, 2007.

Zhou cannot anticipate claims 21-23 because Zhou fails to disclose each and every element recited in the claims. For example, Zhou fails to disclose a combination including "at least one amorphous film-based, biased pulsed DC plasma vapor-deposited slab waveguide comprising a rare-earth doped material," as recited in amended claim 21. Zhou discloses a waveguide comprising a waveguide core 1345 made of silicon, an upper waveguide cladding 1350 made of a silica-titania mixture, and a lower waveguide cladding 1310 made of silicon dioxide. Zhou, paragraph [0188]. Zhou, however, does not disclose a waveguide comprising rare-earth doped materials. Zhou thus fails to disclose a combination including "at least one amorphous film-based, biased pulsed DC plasma vapor-deposited slab waveguide comprising a rare-earth doped material," as recited in amended claim 21.

Because Zhou fails to disclose each and every element recited in claim 21, Zhou cannot anticipate claim 21. Claim 21 is thus allowable over Zhou, and claims 22 and 23 are allowable at least because of their dependence from claim 21. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 21-23 under 35 U.S.C. § 102(e).

Claim Rejections Under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejections of claims 1 and 3-14 under 35 U.S.C. § 103(a). To support a rejection under 35 U.S.C. § 103 the clear articulation of the reason(s)

why the claimed invention would have been obvious must be provided by the Examiner. Such an analysis should be made explicit and cannot be premised upon mere conclusory statements. *See* MPEP § 2142, 8th Ed., Rev. 6 (Sept. 2007). "A conclusion of obviousness requires that the reference(s) relied upon be enabling in that it put the public in possession of the claimed invention." MPEP § 2145. Furthermore, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art" at the time the invention was made. MPEP § 2143.01(III), (internal citation omitted). Moreover,"[i]n determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious." MPEP § 2141.02(I), (internal citations omitted).

Here, the Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 1 and 3-14 for at least the reasons that the claimed invention, as a whole, would not have been obvious in view of the cited references, and the Examiner has not clearly articulated why the claimed invention would have been obvious.

A. Claims 1, 7, and 9

Claim 1, as amended, recites a combination including "at least one amorphous film-based slab waveguide comprising a rare-earth doped material." As discussed above, Zhou fails to disclose this feature.

Moreover, as also noted above, Zhou does not disclose using rare-earth doped materials in the formation of a waveguide. Rather, Zhou discloses using oxides and glass materials. In fact, Zhou provides no disclosure of using any doped materials in the formation of a waveguide.

Accordingly, the claimed invention, as a whole, is not obvious in view of Zhou, and a *prima facie* case of obviousness has not been established for at least this additional reason.

Moreover, the Examiner has not clearly articulated a reason as to why claim 1 is obvious. In the Office Action, the Examiner asserts "it would be obvious to one of ordinary skill in the art to use a photodiode with an optical waveguide to detect and process an optical signal." Office Action, page 4. Such a conclusory statement, without more, is insufficient to establish a *prima facie* case of obviousness. *See* MPEP § 2142, 8th Ed., Rev. 6 (Sept. 2007).

Furthermore, the Examiner asserts "Zhou et al teach that the waveguide could have an irregular shape which meets the limitation of having an amorphous structure," relying on a definition from the American Heritage Dictionary for support of the assertion. Applicant respectfully disagrees with the Examiner's assertion. Zhou discloses "the substrate ... can be made up of irregular shapes, or structures, or materials." Applicant understands this statement to imply that the substrate of Zhou may be made of various materials into various shapes.

Claim 1, on the other hand, recites a combination including an "amorphous film-based slab waveguide." That is, a "slab waveguide" based on an "amorphous film." An amorphous film, as used in materials science, has a meaning different than being merely a film with an irregular shape. One having ordinary skill in the art would likely understand this term of art, and further conclude that merely having an irregular shape is not the same, or an obvious variation of, Applicant's claimed "amorphous film-based slab waveguide." Accordingly, claim 1 is not obvious in view of Zhou for this additional reason.

For at least the foregoing, a *prima facie* case of obviousness has not been established. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 1 under 35 U.S.C. § 103(a).

If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988). Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 7 and 9 under 35 U.S.C. § 103(a).

B. Claims 3 and 8

Claims 3 and 8 depend from claim 1, and thus require all of the elements recited in claim 1. The deficiencies of Zhou with respect to claim 1 are discussed above. Claim 1, and dependent claims 3 and 8 are not obvious when taken in combination with Hübner.

The Examiner asserts that Hübner discloses "an optical waveguide device shown in figure 2a with a slab waveguide that is folded in the plane of the slab." Office Action, page 5. These asserted teachings, even if found in Hübner, do not render claim 1, and dependent claims 3 and 8, obvious in view of the above-noted deficiencies of Zhou.

For example, Hübner discloses, generally, rare earth-doped planar optical amplifiers and waveguides. *See*, e.g., Hübner, page 71. Hübner further discloses that rare earth doping requires specific conditions and specially prepared host materials, and/or particular host materials. *Id.*, at pages 71-72. Zhou, on the other hand, discloses only the use of glass and oxide materials in forming a waveguide. According to the teachings of Hübner, the use of a rare earth doped material with the glass and oxide-based materials would likely not be successful, and render Zhou inoperable for its intended purpose.

Moreover, adapting Zhou to comprise compatible materials and rare earth doped materials would involve significant changes to overall composition of Zhou, and thus also significantly change the principle of operation of Zhou. Claim 1, and claims 3 and 8 in their dependency, is thus not obvious in view of Zhou and Hübner.

Furthermore, Hübner provides no teaching or suggestion of an "amorphous film-based slab waveguide," as recited in claim 1, and required by claims 3 and 8 (emphasis added). Hübner, thus, cannot cure this deficiency of Zhou either.

Accordingly, claim 1, and dependent claims 3 and 8 are not obvious in view of Zhou, even when taken in combination with Hübner. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 3 and 8 under 35 U.S.C. § 103(a).

C. Claim 4

Claim 4 depends from claim 1, and thus requires all of the elements recited in claim 1. The deficiencies of Zhou with respect to claim 1 are discussed above. Claim 1, and dependent claim 4, are not obvious when taken in combination with Kaneko.

The Examiner asserts that Kaneko discloses "a smooth optical waveguide that is coupled to a laser diode." Office Action, page 5. These asserted teachings, even if found in Kaneko, do not render claim 1, and dependent claim 4, obvious in view of the above-noted deficiencies of Zhou.

Moreover, Kaneko discloses an optical waveguide which includes a siloxane-containing polymer film. *See*, Kaneko, Abstract. Kaneko further discloses that the siloxane polymer is preferably applied to hybrid substrates which have refractive indexes similar to silica. Kaneko, col. 3, lines 39-50. Kaneko, however, provides no disclosure directed to "at least one amorphous film-based slab waveguide comprising a rare-earth doped material," as recited in claim 1, and required by claim 4 (emphasis added). Accordingly, claim 1, and dependent claim 4, is not obvious in view of Zhou, even when taken in combination with Kaneko. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 4 under 35 U.S.C. § 103(a).

D. Claim 5

Claim 5 depends from claim 1, and thus requires all of the elements recited in claim 1. The deficiencies of Zhou with respect to claim 1 are discussed above. Claim 1, and dependent claim 5, are not obvious when taken in combination with Beach.

The Examiner asserts that Beach discloses "a waveguide device with a lens duct to couple light from a diode into a waveguide." Office Action, page 6. These asserted teachings, even if found in Beach, do not render claim 1, and dependent claim 5, obvious in view of the above-noted deficiencies of Zhou.

Moreover, Beach provides no disclosure directed to "at least one amorphous film-based slab waveguide comprising a rare-earth doped material," as recited in claim 1, and required by claim 5 (emphasis added). Accordingly, claim 1, and dependent claim 5, is not obvious in view of Zhou, even when taken in combination with Beach. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 5 under 35 U.S.C. § 103(a).

E. Claims 6, 10, 12, and 14

Claims 6, 10, 12, and 14 depend from claim 1, and thus require all of the elements recited in claim 1. The deficiencies of Zhou with respect to claim 1 are discussed above. Claim 1, and dependent claims 6, 10, 12, and 14, are not obvious when taken in combination with Medin.

The Examiner asserts that Medin discloses "a mode-size converter for a reverse tapered region." Office Action, page 6. These asserted teachings, even if found in Kaneko, do not render claim 1, and dependent claims 6, 10, 12, and 14, obvious in view of the above-noted deficiencies of Zhou.

Moreover, Medin discloses a mode size transformer which includes a waveguide and a planar substrate. Medin, col. 5, lines 34-36. Medin further discloses that the substrate may

comprise glass, silica, or other similar glassy materials. Medin, col. 5, lines 59-61. Medin, however, provides no disclosure directed to "at least one amorphous film-based slab waveguide comprising a rare-earth doped material," as recited in claim 1, and required by claims 6, 10, 12, and 14 (emphasis added). Accordingly, claim 1, and dependent claims 6, 10, 12, and 14, are not obvious in view of Zhou, even when taken in combination with Medin. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 6, 10, 12, and 14 under 35 U.S.C. § 103(a).

F. Claims 11 and 13

Claims 11 and 13 depend from claim 1, and thus require all of the elements recited in claim 1. The deficiencies of Zhou with respect to claim 1 are discussed above. Claim 1, and dependent claims 11 and 13, are not obvious when taken in combination with Henrichs.

The Examiner asserts that Henrichs discloses "a VCSEL and a diode are equivalent structures known in the art and that they are both used in optical pumping." Office Action, page 7. These asserted teachings, even if found in Henrichs, do not render claim 1, and dependent claims 11 and 13, obvious in view of the above-noted deficiencies of Henrichs.

Moreover, Henrichs discloses a folded cavity solid state laser which includes a prism waveguide. Henrichs, paragraph [0052]. Henrichs further discloses that the prism waveguide is formed from an ion-doped solid-state, active medium material. Henrichs, paragraph [0148]. Henrichs, however, provides no disclosure directed to "at least one amorphous film-based slab waveguide comprising a rare-earth doped material," as recited in claim 1, and required by claims 11 and 13 (emphasis added). Accordingly, claim 1, and dependent claims 11 and 13, are not obvious in view of Zhou, even when taken in combination with Henrichs. Accordingly,

Applicant respectfully requests that the Examiner withdraw the rejection of claims 11 and 13 under 35 U.S.C. § 103(a).

Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 06-0916.

Respectfully submitted,

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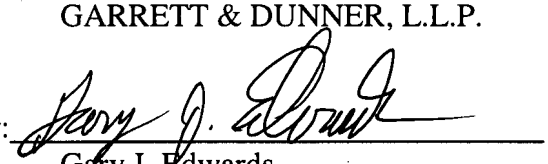
Dated: October 31, 2007

By: 

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